## REMARKS

The application contains claims 1-75. In view of the foregoing amendments and following remarks, Applicants respectfully request allowance of the application.

Applicants thank Examiner Thangavelu for the courtesy of the December 14 interview with the undersigned. At the interview, the undersigned presented an explanation of the underlying technology as well as an explanation of the differences between the cited prior art and the claimed subject matter. The substance of the arguments is repeated here.

## SPECIFICATION OBJECTIONS

The objections noted in ¶ 5 of the Office Action are overcome by the foregoing amendments to the specification, ¶¶ 4 and 17.

## CLAIM OBJECTIONS

The objections noted in ¶¶ 6-7 have been corrected by amendment. Specifically, typos in claim dependencies have been corrected. The objections to claims 22-23 also have been corrected.

Applicants respectfully submit that claim 31 is correct as drafted. The claim refers to a reliability calculation made for sample $x_n$ and, therefore, it is appropriate to define K as a number of samples adjacent to sample $x_n$.

## SECTION 112 REJECTIONS

Claims 38, 50, 58 and 67 have been amended to make express reference to the values $\sigma$ and a. No further reference to xn is necessary because these claims identify it as a candidate sample. The value y does not appear in the formulae recited in these claims.

## SECTION 101 REJECTIONS

Claims 1-43 stand rejected as drawn to non-statutory subject matter. The claims have been amended to explain that the captured samples represent a communication signal captured at a receiver. As such, the claims are directed to a process within the technological arts.

Applicants respectfully request withdrawal of the § 101 rejection to claims 59-68. The claims refer to a computer readable medium, which is statutory per se.[1]

Applicants respectfully request withdrawal of the § 101 rejections to claims 69-75. These claims refer to data signals that are generated according to a process. As such, they are product by process claims. Under current Federal Circuit law, a claim recites statutory subject matter if the claim describes an invention that is tangible, concrete and produces a useful result. These claims satisfy the required legal test. The claimed data signal is tangible – it can be stored and retrieve from a host of storage media. It is concrete and useful. In the context of the present invention, for example, the methods that generate the claimed data signal recover intelligible information from corrupted data signals. Therefore, the pending claims recite allowable subject matter.

Applicants respectfully request withdrawal of all outstanding § 101 rejections.

## PRIOR ART REJECTIONS

### Claim 1-9 Define over Hassan and Dent

Claim 1 stands rejected as obvious over Hassan (U.S.P. 6,581,179) and Dent (U.S.P. 6,556,634). Applicants respectfully request withdrawal of this rejection because the cited art fails to teach or suggest all elements of claim 1. For example, claim 1 recites:

> estimating decoded symbols from a sequence of captured samples,
>
> calculating a reliability factor of a candidate sample from values of a plurality of estimated symbols in proximity to an estimated symbol that corresponds to the candidate sample,
>
> if the reliability factor is less than a predetermined limit, designating the candidate sample as a reliable symbol.

Neither Hassan nor Dent teaches this subject matter. Hassan refers to "reliability" very generally. Hassan uses training bits whose values are known both at the transmitter and a

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[1] It is not clear why the Office Action raises questions regarding the *specification* to determine whether the *claims* recite statutory subject matter. Nevertheless, note that the specification discloses exemplary computer readable media, for example, at p. 21, para 73.

receiver. Hassan. Based on a comparison between the transmitted values and the received values, Hassan can determine reliability. Hassan does not disclose, for example, an estimating step which generates decoded symbols from captured samples, then determining a reliability factor of a candidate sample from *symbols* in proximity to the estimated symbol that corresponds to the candidate sample.

Dent describes operations performed when merging multiple data streams received from different prongs of a RAKE receiver into a common stream. Applicants see no similarity between Dent and the subject matter of claim 1. Accordingly, because the cited prior art do not teach or suggest all elements of claim 1, Applicants request withdrawal of the obviousness rejection thereto.

Claims 2-9 depend from claim 1 and are allowable as well.

### Claim 10-18 Define over Hassan and Dent

Independent claim 10 recites:

estimating decoded symbols from a sequence of captured samples,
calculating a reliability factor of a candidate sample from values of a plurality of
decoded symbols in proximity to the candidate sample,

As discussed above, neither Hassan nor Dent teach such subject matter. Hassan does not calculate a reliability factor from values of a plurality of *decoded symbols* in proximity to a candidate sample; he uses training bits. Dent makes no reference to reliability whatsoever. Claims 10-18, therefore, are allowable over Hassan and Dent as well.

### Claims 19-43 Define over Rakib and Sakoda.

Independent claim 19 stands rejected as obvious over Rakib (U.S.P. 6,665,308) and Sakoda (U.S.P. 6,456,669). Applicants respectfully request withdrawal of the rejection because the cited art does not teach or suggest all elements of the claims. Claim 19 recites in part:

revising the ISI coefficients based on the decoded symbols and corresponding
received sample values, wherein the contribution of each symbol-sample pair is
weighted according to reliability factor of the respective captured sample.

As explained during the interview, the cited art does not teach or suggest this subject matter. The Office Action refers to Rakib as disclosing basic equalization operations – removal of channel effects – and acknowledges that Rakib discloses nothing relevant to reliability. It asserts that Sakoda teaches data block reliability and, somehow, that it would be obvious to modify Rakib to arrive at the claimed invention. Applicants respectfully disagree.

Sakoda states that a weighting circuit computes reliability for a data block and also computes a weighting coefficient according to the reliability. The weighting circuit multiplies a weighting coefficient and the received symbol together for each data block. Sakoda, Col. 11:62-12:4.

This disclosure does not teach the subject matter of the pending claims. First, the claims require a revision of ISI coefficients based on decoded symbols and corresponding received sample values. The cited portion of Sakoda describes processes that are performed only on received symbols S37. There is no mention of decoded symbols. Indeed, decoded data is unavailable to Sakoda's weighting block 46 – it becomes available only after the data bit series S40 is output from the Viterbi decoder 17 (FIG. 10). Thus, Sakoda discloses no use of any symbol-sample pairs as recited in claim 19. Additionally, as explained during the interview, Sakoda's disclosure describes reliability only the context of a **data block**. Sakoda does not refer to a contribution of **each** symbol-sample pair being weighted according to a reliability factor of a **respective** captured sample. The cited art, therefore, does not render claim 19 obvious. Claims 20-43 depend from claim 19 and, therefore, are allowable as well.

### Claims 44-51 Define Over Rakib and Sakoda

Applicants respectfully request withdrawal of the obviousness rejection to claims 44-51 because the cited art fails to teach all elements of the pending claims. Claim 44, for example, recites:

> an ISI estimator having a first input coupled to the symbol decoder output, a second input coupled to the first input of the symbol decoder and an output for the estimated ISI coefficients, **wherein the ISI estimator estimates ISI coefficients based on the decoded symbols and corresponding received sample values, each symbol-sample pair being weighted according to reliability factor of the respective captured sample.**

Neither Rakib nor Sakoda teach this subject matter. Rakib has no disclosure of reliability whatsoever. Sakoda's reliability discussion, as noted, has no relationship to a symbol-sample pair or revision of ISI estimates. There is no discussion of using weights in connection with *each* symbol-sample pair or according to a reliability factor of a *respective* captured sample. The cited art does not render claim 44 obvious. Claims 45-51 depend from claim 44 and, therefore, are allowable as well.

### Claims 52-58 Define Over Rakib and Hassan

Claim 52 has been amended to recite:

> a demodulator to generate captured samples from a communication signal received via a channel, • • •
>
> a processor coupled to the memory by a communication path, the processor logically organized as a reliable symbol detector, an ISI estimator and a symbol decoder, the reliable symbol detector to identify which of the captured samples are likely to be located within a correct decision region of a constellation notwithstanding ISI effects of the channel, the ISI estimator to estimate the ISI effects based on the samples so identified by the reliable symbol detector.

Neither Rakib nor Hassan discloses such subject matter. The Office Action acknowledges that Rakib has no disclosure relevant to the reliability features recited in claim 52. Hassan, as noted, discloses a system that compares received values of training bits against known values of those training bits to make a reliability determination. Hassan does not disclose a detector that identifies which captured samples are likely to be located within a correct decision region of a governing constellation notwithstanding ISI effects of the channel. Hassan further fails disclose an ISI estimator that estimates ISI effects based on samples identified by the reliable symbol detector. Accordingly, claim 52 is allowable over the cited art.

### Claim 59-68 Define Over Rakib and Sakoda

Applicants respectfully request withdrawal of the obviousness rejection to claim 59 based on Rakib and Sakoda because the cited art does not teach or suggest all elements of that claim. Specifically, claim 59 recites:

> estimating decoded symbols from a sequence of captured samples and a set of estimated ISI coefficients, and

revising the estimated ISI coefficients based on the decoded symbols and corresponding received sample values, ***wherein a contribution of each symbol-sample pair to the revision is weighted according to reliability factors of the respective captured sample.***

Neither Rakib nor Sakoda teach this subject matter. Rakib has no disclosure of reliability whatsoever. Sakoda's reliability discussion, as noted, has no relationship to a symbol-sample pair or to revision of ISI estimates. There is no discussion of using weights in connection with ***each*** symbol-sample pair or according to a reliability factor of a ***respective*** captured sample. The cited art does not render claim 59 obvious. Dependent claims 60-68 are allowable as well.

### Claim 69-72 Define Over Rakib and Sakoda

Applicants respectfully request withdrawal of the obviousness rejection to claim 69 based on Rakib and Sakoda because the cited art does not teach or suggest all elements of that claim. Specifically, claim 69 recites:

> contemporaneously revising the estimated ISI coefficients based on a comparison of the estimated symbols and the decoded symbols, ***wherein a contribution of each symbol-sample pair to the revision is weighted according to reliability factors of the respective captured sample***, and

As noted, neither Rakib nor Sakoda teach this subject matter. Rakib has no disclosure of reliability whatsoever. Sakoda's reliability discussion, as noted, has no relationship to a symbol-sample pair or to revision of ISI estimates. There is no discussion of using weights in connection with ***each*** symbol-sample pair or according to a reliability factor of a ***respective*** captured sample. The cited art does not render claim 59 obvious. Dependent claims 60-68 are allowable as well.

### CONCLUSION

Applicant respectfully requests entry of the above amendments and favorable action in connection with this application. The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. 1.16 or 1.17 to Kenyon & Kenyon Deposit Account No. 11-0600. The Examiner is invited to contact the undersigned at (202) 220-4235 to discuss any matter concerning this application.
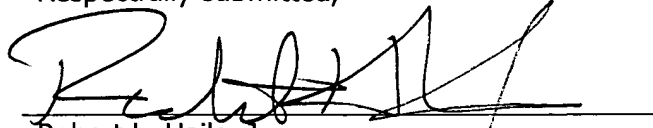
All claims are allowable. Allowance is solicited.

Applicant: Eilon RIESS
Serial No. 09/899,843
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Respectfully submitted,

Date: December 19, 2005

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